INTERNATIONAL DEVELOPMENT RESEARCH CENTRE
Box 8500, Ottawa, Canada, K1G 3H9 • Telephone (613) 996-2321
• Cable: RECENTRE • Telex: 053-3753

CANADA

FEATURE

A monthly features service on scientific, technical, and educational subjects pertinent to development.

Words: 1050 approx.

THE VILLAGE OF THE FUTURE:

A CURE FOR URBAN ILLS?

by DAVID L. TERRY

The scene is a small village somewhere in Asia. It is the dry season, the sun scorches the already parched earth, and the stream which is the only source of water for irrigation has dried up. The village farmers' meagre savings are rapidly dwindling, and food stored from the last harvest will soon be finished.

Under such circumstances it is little wonder that so many join the ever-increasing migration of rural poor to already overcrowded cities, seeking employment of almost any type. Attempts by municipalities to resettle the migrants have usually failed. The poor return to the city core where they have a better chance of finding work.

The result, according to science writer Jean-Marc Fleury, writing in the magazine *IDRC Reports*, is that the poor are coming to constitute the majority of the urban population in developing countries. And the cities will continue to grow. By the year 2000 the Third World may have 40 cities with populations over 5 million.

The city of the future, it seems is already upon us. But it is a far cry from the gleaming skyscraper city of the futurists' dreams. The cure for this urban nightmare could well be to make life more livable for the small farmer by designing "the village of the future".

The component parts of such a village are already becoming a reality at the Asian Institute of Technology (AIT) near Bangkok, Thailand. Here an international faculty of 66 professors and more than 500 graduate

.../2

engineering students from all over Asia are working on low-cost innovative technology that could revolutionize village life and help reverse the cycle of poverty in rural Asia.

Researchers have developed simple biogas digesters to produce cooking gas. The low-cost biogas tanks are constructed of concrete reinforced with bamboo. They are connected with plastic pipes. The gas may be produced from animal or human wastes mixed with vegetable matter such as rice straw or water weeds.

The by-product of the gas production is a harmless slurry which can be used to fertilize fish-ponds constructed nearby. The slurry encourages the growth of organisms on which fish such as tilapia will thrive. So the village has a source of both energy and additional food — and possibly income if the fish production is developed on a commercial basis.

A reliable supply of water is critical to village life. A study by AIT researchers (Water for the Northeast: A strategy for the development of small-scale water resources) recommends that villagers own and operate village water projects. It was found that a strong sense of ownership ensures proper operation and maintenance of the water supply.

The study also reported that the only solution for water supply in some areas would be to dig ponds or wells. With a grant from the International Development Research Centre (IDRC), of Canada, AIT is testing a low-cost handpump made entirely of plastic, which can operate at depths of up to 46 metres.

For irrigation from streams a solar-powered pump model has been developed by a graduate student at the Institute. The pump can lift water to a height of 5 metres with a discharge of 4 litres per minute.

But with increasing population, many sources of drinking water are becoming polluted. An AIT environmental engineer, Dr N.C. Thanh, has developed a low-cost water purification system. Water from a river or stream is pumped first into a rock bed, then into locally-made concrete tanks, where it is filtered through a bed of sand. This simple process produces clean, potable water.

At Jedee-Thong village on the Dhao Phrya river north of Bangkok, villagers under the direction of Dr Thanh constructed their own water filtration system. Word of this simple method of obtaining clean drinking water quickly spread to other villages, and now several have constructed similar units.

To increase the use of paddy-growing land during the dry season, farmers plant soybeans directly into the stubble after the rice harvest. This avoids the need for tilling, and keeps the precious moisture in the soil. Most of the planting is performed by women. It is slow, back-breaking work.

To improve the planting, both in efficiency and convenience, a simple manually operated soybean seeder was developed. Using the seeder, the worker stands (instead of bending or squatting) and simply presses the seed into the stubble. Soybean production is increased, and the work is made easier.

Poor farmers are usually forced to sell their rice harvest immediately, at prevailing prices, or face losses through spoilage, especially in the rainy season. To help solve this problem AIT researchers have developed a solar rice drier and a low-cost grain storage bin.

Constructed of bamboo and covered with clear plastic, the dryer has no moving parts, and its only power source is the sun. The sun's heat is absorbed by a layer of previously burnt rice husk on the floor of the drier, and rises through a woven drying platform.

The low-cost rice storage bin is made of ferrocement, a material particularly suitable to developing countries because its basic ingredients — sand, cement, and reinforcing mesh — are readily available in most countries.

The Institute has also built a solar-powered refrigerator for use in villages with no electricity supply. It is now undergoing tests for reliability. Other projects under study include a solar tobacco dryer and a solar vegetable dehydrator.

To help villagers improve their housing, the Institute has encouraged "Building Together" groups. Costs are kept to a minimum as the groups of families first build a small factory to produce their own ground beams and bricks. One group can produce 400 blocks a day, with 625 blocks required to complete a two-storey house.

The total cost of this type of housing is from one-fifth to one-eighth that of conventional housing. Other low-cost building materials developed at AIT include the use of bamboo with rattan bindings for road construction, and burnt rice husk ash as a substitute for cement in making concrete.

Within a 3000 kilometre radius of the Asian Institute of Technology — about 3 hours by jet airplane — one finds half the population of the world. Nearly all of these people are poor; three-quarters of them live in villages. Through its programmes of teaching and research the Institute is helping to ensure that the village of the future will be a better place to live.

- END -

IDRC-F148e

November/December 1980